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ABSTRACT

This update on computer technology--as it affects learning assistance directors and developmental education personnel--begins by reporting on new developments and changes that have taken place during the past two years in five areas: (1) hardware (microcomputer systems, low cost PC clones, combination Apple/PC machines, lab computer controllers for instructional management); (2) peripherals (large screen projection, high speed printers, ribbon re-inkers, oversize monitors, printer buffers, modems, mouse alternatives, scanners, mark sensing, hard disk drives, computer equipment security, screen readers for the blind, eye-movement recording systems, and learning center accountability and bar code readers); (3) software (administrative, desktop publishing, multilingual, utilities, test generators, DOS tutorial, public domain, computer viruses and vaccines, printing efficiency software, grammar assistance, software source catalogs, special education and rehabilitation software, educational discounts, higher education 1987 software awards, academic courseware exchange, and a software database); (4) books and periodicals; and (5) professional associations and conferences. Current trends are then discussed, including software rental, software compatibility, computer swap meets, electronic universities, increased computer capacity, and expert systems; names and addresses of selected vendors are included. The paper concludes by describing five challenges presented to post-secondary educators by these innovations: (1) mastering computer technology; (2) networking for professional growth; (3) encouraging the development of imaginative, well-designed and useful educational software; (4) improving software purchasing decisions; and (5) collecting and organizing information for decision-making. (GL)

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Computers in Post-Secondary Developmental Education and Learning Assistance

by Frank L. Christ and Richard C. McLaughlin

Abstract

This update of computer technology — as it affects learning assistance directors and developmental education personnel — reports on new developments and changes that have taken place during the past two years in five areas: 1) hardware, 2) peripherals, 3) software, 4) printed material, and 5) professional associations and meetings. In addition, it identifies four challenges and opportunities that these present to post-secondary educators.

Hardware

Computer systems

In 1987, two major advances took place in computer systems: IBM introduced its new microcomputer standard, the PS/2, and Apple released its high-end Macintosh II. Neither of these two new systems should alter purchasing decisions for CAI or program management; most educators have yet to use the capabilities of existing equipment!

Low cost PC clones

If you want dependability, performance, and compatibility as good as the IBM PC brand, but at lower cost, look at the many clones available, such as those reviewed and compared by *InfoWorld* ("Low-cost XT Compatibles," June 8, 1987, pp. 35-38). The reviewers' top choice for PC clones was the Proteus (Airport 17 Center, Hasbrouck, NJ 07604); for PC XT's, it was the Victor Champion (380 El Pueblo Road, Scotts Valley, CA 95066).

Combination Apple/PC machines

Do you want a computer in your Learning Assistance Center that can run both Apple II and IBM PC software? There are now three different ways to accomplish this: purchase a computer already equipped to run in both modes, add an Apple II emulator to an IBM PC-type machine, or place a PC clone inside your Apple II.

If you're starting from scratch, look at the WPC Bridge from Cordata (1055 W. Victoria Street, Compton, CA 90220). Should you wish to add Apple II capabilities to an existing IBM PC or clone, then check out the Trackstar 128 board that plugs into one of your PC's internal expansion slots (Diamond Computer Systems, Inc., 1225 Tiros Way, Sunnyvale, CA 94086; also available through Tandy Radio Shack computer dealers). Or, go the other way by adding PC capabilities to your Apple machine with a PC Transporter. (Applied Engineering, P.O. Box 798, Carrollton, TX 75006).

Lab computer controller

Inspired by the now familiar audio language laboratory, the Guru System can be used to give personal instruction to a class of up to 100 students from a master computer at an instructor's desk (Index Electronics, Inc., 1560 La Pradera Drive, Campbell, CA 95008). Students requiring assistance as they progress through a program on their computers signal their instructor by pressing a help button. When the instructor responds, the student's display is not only seen on the master computer, but is now controlled by the instructor, who can talk to the student through a two-way headset. The cost to add on a 32-station Guru System is about $6,400.

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Peripherals

Large screen group viewing

The most exciting development in 1987 — having major implications for using computer assisted instruction in classrooms with large groups — was the overhead projector projection panel. It transfers the images from your computer screen via an overhead projector to a large screen. Currently, there are many models to choose from: Sharp QA-25 (Sharp Electronics, Sharp Plaza, Mahwah, NJ 07430), Kodak Datashow (Eastman Kodak), the Vivid PC Viewer (Vivid Systems Inc., 41752 Christy Street, Fremont, CA 94538), the PC Viewer from In Focus Systems, Inc.(7649 Southwest Mohawk Street, Tualatin, OR 97062), the Dukane MagniView 200 (Dukane Corp., AV division, 2900 Dukane Drive, St. Charles, IL 60174), the MagnaByte from Telex (9600 Aldrich Ave S., Minneapolis, MN 55420), and the Model DD-1000 from Elki (27882 Camino Capistrano, Laguna Niguel, CA 92677).

Printers

If you need a high speed printer at a reasonable cost, ask about the OTC 700 and OTC 800 from Output Technology Corporation (9922 E. Monterey, Suite #6, Spokane, WA 99206). They are three to four times faster than most dot matrix printers available. The OTCs, printing at 700 and 800 characters per second, are dependable, heavy duty printers. Available from dealers at institutional costs of $1, 400 and $1, 900.

Printer ribbons

If you want to save money on printer ribbons, look into the re-inkers on the market that re-ink fabric/nylon ribbons up to 20 or more times at about 5 cents an inking (PBM Industries 360 N. Andreason, P.O. Box 2839, Escondido, CA 92025, or Bede Tech, 8327 Clinton Road, Cleveland, Ohio 44144). *Caution: re-inking replaces only the ink, not the fabric! Heavy duty printer use may preclude re-inking; it's best used for occasional use situations where ribbons have developed dry spots. Worn-out fabric may damage your print heads.*

Monitors

If you want a full-page display for 8 1/2" x 11" forms or publication layouts that allows you to see 66 lines of text and graphics without scrolling, look for the following oversize monitors: the Genius-402 for PC-XT and AT from Micro Display Systems, Inc. (1300 Vermilion Street, P.O. Box 455, Hastings, MN 55033). Priced at around $1,495 with resolution of 736 x 1080, it is compatible with most word processors and desk top publishing software. Also check out the Amdek 1280, with resolution of 800 x 1280 (Amdek, (2201 Lively Blvd., Elk Grove Village, IL 60007).

Printer buffers

Think of a buffer as a reservoir for your computer's printer output data; it allows you to use your computer for other tasks while the printer is running. Available from many dealers, from $50 to $200.

Modems

Sooner or later, you will be considering "talking" with other computers, either on campus or across the country, even around the world. The preferred speeds at which you can transmit and receive data over telephone lines with a modem now range from 1200 baud up to 9600 baud. Since ten baud equals approximately one character per second, at 9600 baud you can send or receive about 57,600 characters or 3.5 pages per minute. If you are making a first-time purchase of a modem, get at least 1200 or preferably 2400 baud. For higher speeds, get expert advice regarding the equipment at the other end, as no single standard has yet been established.

Mouse alternative

A miniature optical tablet, the ProPointer, connects to a serial port and uses a stylus that moves like a pencil and has a resolution of more than 300 points per inch (Lightgate, 6300 Telegraph Ave., Oakland, CA 94609).

Scanners

Note that there are two distinct scanner functions: simply capturing visual materials into a graphics program versus reading text materials directly into your favorite word processing program. Therefore, you must be sure the hardware and software you acquire can handle one or both functions to suit your needs. OCR (optical character recognition) scanners for both the Macintosh and IBM are available. Some can even perform at a rate of one or two pages a minute with automatic sheet feeders. Available from Saba Technologies, Inc. (9300 S.W. Gemini Drive, Beaverton, OR 97005).

Mark sensing

OMRs (optical mark readers) are devices that can be connected to a learning center computer to assist in diagnostic testing, surveys, and evaluation programs. Sheet form machines are available from Scan-Tron (1361 Valencia Avenue, Tustin, CA) and National Computer Systems (11000 Prairie Lakes Drive, P.O. Box 9635, Minneapolis, MN). Card form machines are available from Chatsworth Data (20170 Lassen St., Chatsworth, CA 91311). These vendors can supply you with lists of software programs available for their systems, which can interface with most personal computers as well as mainframes and timesharing systems.

Hard disk drives

The breakthrough in hard disk drives is not merely in increased capacity and low cost, but also in configuration: hard-cards and removable Bernoulli cartridges. Hard cards save you the trouble of getting into your PC electronics and causing a circuitry problem; you simply slide a hard card into one of the slots available for expansion boards. Starting at prices under $400, hard cards range from 10 to 120 Mbytes in capacity and offer a reliable alternative to permanently mounted hard disks for increasing PC storage capacity. *PC Magazine* selected the standard Brand Flash Card-20 and Flash Card-30 from CompuAdd as a best low-cost choice (*InfoWorld*, February 10, 1987, pp. 195-219). Although the Bernoulli Box is more expensive ($1,800 to $5,000 for 20-megabyte hard disk), you might choose it for its fast backups, its insurance against loss of data through a disk crash, and its capability for removal and safe storage (*InfoWorld*, June 8, 1987, pp. 57-58).

Computer equipment security

Two equipment security systems that can be used in computer labs and learning center offices to foil thieves are Kablit Systems (Secure-It Inc., 10 Center Square, East Longmeadow, MA 01028) and the Spider (Omnium Corp., Stillwater, MN 55082). Kablit uses fasteners attached to existing screws on equipment with a cable passing through the fasteners. Installs in minutes at cost of less than $50. The battery-operated Spider, about $125, uses adhesive electronic sensors to monitor equipment movement of multiple units. *Caution: the adhesives used to attach this device have been known to fail; be sure to have them properly applied and checked regularly!*

Screen reader for the blind

IBM has introduced a screen reader that enables blind and visually impaired users to hear the text displayed on a PS/2 monitor. Costing about $600, the Screen Reader requires a text-to-speech synthesizer, and a speaker or headset. You can order directly from IBM by calling 800-IBM-2468.

Eye-movement recording system

An Apple II add-on, called the Visagraph, from Instructional/Communications Technology, Inc. (10 Stepar Place, Huntington Station, NY 11746) — the company that introduced the Reading Eye Camera — records eye-movements while reading and calculates fixations, regressions, recognition span, reading rate, directional attack, and relative efficiency.

Learning center accountability and bar code readers

A learning assistance center can now report student usage of its programs and services by numbers of users, ethnicity, sex, class standing, and major with a reader attached to its computer that scans bar codes to link student data, tutor or counselor identification, program material titles, or workshop attendance with date and time of a service. To learn more about bar code systems and available equipment, read the review, "Reading Between the Lines" in *PC Magazine* (June 28, 1988, pp. 213-275). For software specifically written for learning assistance centers, request a demo disk from Personal Efficiency Programs (P.O. Box 3448, Seal Beach, CA 90740). Note that you get what you pay for: the less expensive optical units (under $1000) require the development of some finesse by users, while the more costly laser-type systems are quite reliable and less dependent upon operator training. Check with your librarians about their plans for such devices; you may be able to benefit through joint purchases and servicing.

Software

Administrative

If you use a Day-Timer, look into its computer printout address/directory system. For IBM PC or compatibles, the program compiles, maintains, and prints updated address and phone directories that fit into your Day-Timer. (Day-Timers, Inc., Allentown, PA 18001). A similar application is available from Borland International (Scotts Valley, CA 95066). If you design forms for your learning assistance center or developmental education program, look at software like EZ-Forms Executive (EZX-Corp, 403 Nasa Road 1 East, Webster , TX 77598); FormWorx (Analytx International, Inc., 1365 Massachusetts Avenue, Arlington, MA 02174), or Form Tool (Bloc Development Corporation, 1301 Dale Blvd, Miami Beach, FL 33139). They let you draw lines instantly and easily and integrate text and graphics to simplify old forms or design new forms.

Desktop publishing

You can produce professional brochures, tutorial manuals, study skills handbooks, and developmental skills workbooks with your Macintosh or PC and any one of the following: Pagemaker (Aldus Corporation), Ventura Desktop Publishing (Xerox Corporation), and Ready-Set-Go (Letraset USA, 40 Eisenhower Drive, Paramus, NJ 07653). You can read a comparative review of these three in *InfoWorld* (January 5, 1987, pp. 39-49). Bear in mind that desktop publishing is a specialized area requiring the development of some expertise in typography and graphic arts. You may be more easily and quickly satisfied by using the advanced features (such as multiple column layouts and a wide variety of type styles and sizes) now commonly found in top-of-the-line word processors, such as Microsoft Word and Word Perfect.

Multilingual

Foreign language word processing software for XT/AT computers with dot matrix or laser printers is now available in more than twenty languages. Among these are Arabic, Chinese, Greek, Hebrew, Hindi, Japanese, Russian, and Vietnamese from Dong Fang Bilingual Computer Systems (4340 California Street, San Francisco, CA 94118) and Megachomp Company (3524 Coltman Avenue, Philadelphia, PA 19149).

Utilities

Among the many new utilities that can make your computing time easier and more effective are: BookMark (Intellisoft, 51 Digital Drive, P.O. Box 5055, Novato, CA 94948) saves your work in progress to your hard disk even if someone pulls the plug, a power failure occurrs, the keyboard freezes up, or your system crashes. Tornado Notes (Micrologic Corporation, 100 2nd Street, P.O. Box 174, Hackensack, NJ 07602) is the answer to an information junkie's dream! It holds up to 500 notes, each in its own window, and allows you to enter, combine, and find information fast. To get the most out of this remarkable software, keep your PC on while you are on the telephone or reading. It is even better than Post-It notes. If you need to make many phone calls, Hot Line from General Information, Inc. (401 Park Place, Suite 305, Kirkland, WA 98033) can help you find and dial a number instantly from among thousands of numbers stored in your computer. It also provides the area code and time of day for U.S. cities. Hot Line could be your modem's best friend. Utilog I from Benta (12708 East 62nd Court, Kansas City, MO 64133) provides security, monitoring, and accounting information for your office or learning center computers. Snipper lets you capture any part of your screen and send it to a printer or disk file or any applications program that accepts keyboard input. It's free. *See PC Magazine* (October 27, 1987, pp. 359 - 366).

Test generator

LXR-Test integrates graphics layout, word processing, and database technologies to help educators develop tests faster, easier, and better on a Macintosh. From Logic Extension Resources (9651 Business Center Drive, Suite C, Rancho Cucamonga, CA 91730), LXR-Test is available in a 500 or unlimited question edition. (*See* the entry above on Mark Sensing.)

Learning DOS the easy way

DOS Help! from Flambeaux (1147 East Broadway, Suite 56, Glendale, CA 91205) is a tutorial and screen reference that provides over 300 screens of immediate information about the IBM-PC Disk Operating System.

Public domain

Before you write your own or buy software, find out if it is available in public domain. Public domain software is either free from user groups, downloaded from electronic bulletin boards, or available at minimal cost from these public domain clearinghouses that will send a catalog upon request: Best Bits & Bytes (P.O. Box 5332, North Hollywood, CA 91616); Genesis Systems (P.O. Box 406, Claremont, CA 91711); The Computer Rooms (P.O. Box 1596, Dept. 104, Gordonsville, VA 22942 and PC-SIG, 1030 E. Duane Ave., Suite D, Sunnyvale, CA 94086). In addition, you can get free public domain software from the Technical Support Department of the Navy Regional Data Automation Center in Norfolk, Virginia by writing or dialing its bulletin board (804-445-1627 or 1121) to see what is available and to download to your computer. Programs includes DOS and Z-DOS utilities, a Lotus 1-2-3 Budget system, and a dBase correspondence control tracking program.

Computer viruses and vaccines

Virus programs are sophisticated lines of subversive code that someone in anger or puckishness has hidden in a program that will spread to other programs, especially on a hard disk, so as to cause programs and even entire disks to self-destruct. In 1975, John Brunner wrote a sci-fi novel, *Shockwave Rider* (Harper and Row), that depicts such a computer virus. To combat these computer viruses, some software developers have created vaccines such as Syringe, EXE, Canary, and Infect (Sophco, P.O.Box 7430, Boulder, CO 80306), and Ntivirus (Orion Systems, P.O. Box 128, Pierrefonds, Quebec, Canada, H9H4KB). You can also find public domain vaccines through a local user group or on a trusted bulletin board.

Printing efficiency software

You can print up to 10,000 pages while you are using your computer with PrintQ from SDI (1572 Sussex Turnpike, Randolph, NJ 07869). Among other functions that you can get PrintQ to do:

restart printing from any page, view documents before printing, print up to 255 copies automatically, and save material for later printing.

Grammar assistance

With Grammar Coach, you can have student essays evaluated for grammatical errors, such as: comma splices, dangling prepositions, elements of style, spelling, idioms, passive constructions, pronoun agreement, split infinitives, and verb agreement (Linguistic Systems, Inc., P.O. Box 40127, Reno, NE 89504). The program features an unlimited user hotline and remote support by modem. Only you can decide if the price — $15,000 to 17,000 — is a cost-effective way to deliver grammar tutorials!

Software source

Selective Software (903 Pacific Avenue, Santa Cruz, CA 95060) will send you a free catalog describing over 50 programs ranging from games — like Scrabble™, baseball, sailing, cribbage, golf, pinball, roulette, chess, bridge, and blackjack — to educational programs in government, speed reading, typing, children's math, SAT preparation, and writing — to career programs like resume writing, and job searching. If you are designing a learning facility, look at Dream House to help you draft your floor plan quickly and inexpensively (Computer Easy, 414 E. Southern, Tempe, AZ 85282).

Special education and rehabilitation software

DLM/Teaching Resources (One DLM Park, Allen, TX 75002) has recently published an Apple resource book of 1000 entries describing software, hardware adaptations, and information sources that are available to support disabled computer users.

Educational discounts

Chambers International Corp. (5499 N. Federal Hwy., Suite A, Boca Raton, FL 33487) discounts over 500 software programs to educators.

Higher education software awards for 1987

EDUCOM, a non-profit consortium of over 500 post-secondary institutions and NCRIPTAL, a research and development center funded by the University of Michigan and Federal monies to study ways to improve college education, have established awards to encourage the development and use of high-quality, educationally sound software. Awards are made in four categories: 1) tutorial software, 2) simulation software, 3) tools, and 4) integrated software that bridges two or more of the first three categories. The seven packages judged best in 1987 were: 1) Introduction to General Chemistry, 2) Mechanical Properties of Active Muscle (anatomy/physiology simulation), 3) Exploring Small Groups (math simulation), 4) Interactive Video Disc Lessons for General Chemistry, 5) Standing Waves(physics simulation), 6) Eventlog (psychology), and 7) The Would-Be Gentleman (seventeenth century France simulation). *See* the October 1987 issue of *Academic Computing*, pp. 36-41, for details.

Academic courseware exchange

Kinko's, the nation-wide copier franchise, offers a free catalog of over 130 Apple and Macintosh software packages for higher education use. For a catalog, call 800-235-6919 (In California, 800-292-6640).

Software database

TESS (The Educational Software Selector) is a comprehensive database of over 10,000 educational microcomputer programs that provides detailed information, review citations, supplier information, and a product rating according to standards developed by the Educational Products Information Exchange in cooperation with Consumer's Union. Write EPIE Institute P.O. Box 839-S, Water Mill, NY 11976.

Books and Periodicals

The Spring 1987 issue of the quarterly *College Microcomputer* (Rose- Hulman Institute of Technology, Terre Haute, IN 47803) contains twenty-four papers originally presented at the Third Annual CUNY Microcomputers and Basic Skills in College Conference held in November 1985. In addition to the old standbys (*InfoWorld, PC Monthly, MacUser, Byte, Electronic Education, T.H.E. Journal,* and *ADCIS Journal*), the list of desirable computer periodicals has been augmented by several new titles. *Education & Computing,* an international journal, will explore theory, application, and research (Elsevier Science Publishers, 52 Vanderbilt Avenue, New York City, 10017). The Macintosh has a new newsweekly, *MacWeek* (525 Brannan Street, San Francisco, CA 94107), that features news and reviews. In addition to *Micro Publishing Report,* the PC desk top publishing monthly (2004 Curtis Avenue, Redondo Beach, CA 90278), there is *Personal Publishing* (549 Hawthorn, Bartlett, IL 60103), and *Publish!* (501 Second Street, San Francisco, CA 94107) — all these demonstrate how to produce pages for newsletters, fliers, and reports. *Academic Computing* (200 West Virginia, McKinney, TX 75069) is a bi-monthly that covers post- secondary computing.

Professional Associations and Conferences

Slowly, our professional associations are tiptoeing into this technological age. National Association for Developmental Education (NADE) has an electronic bulletin board up and running. Contact Rob Somers at National Center for Developmental Education (Appalachian State University, Boone, NC 28608). Western College Reading and Learning Association (WCRLA), under the leadership of David Caverly and William Broderick, has a networking Computer Special Interest Group and holds a Computer Fair at its annual conferences. American Association for Counseling and Development (AACD) has a working media committee, the Counseling Software Review Board (2017 Cedar Street, Berkeley, CA 94709), that has published a set of standards for counseling software.

Trends

Software rental

You can try it before you buy it, including software for Apple, Commodore, and IBM. Over thousands to choose from. Look in computer magazines as well as local telephone company yellow pages for rental companies.

Software compatibility

Although you can do limited data transfer among different computer systems with software like Uniform (Blue Heron, 1108 S. Second Street, Dekalb, IL 60115) and Media Master (Intersecting Concepts, 4573 Heatherglen Court, Moorpark, CA 93021), new alternatives make it easier to transport, read, and even write files on incompatible machines. Look for an Apple release enabling the Macintosh SE and II to read IBM disk-based files. The Apple File Exchange utility now included with the purchase of every Macintosh permits transferring AppleWorks and other ProDos files into the Macintosh or the other way around. Do not overlook the simplest solution: use any two computers of whatever type, along with their respective communications programs, and connect them with the proper cable to transfer data files. Or, upload from one machine to any available timesharing system or bulletin board and download to the other machine.

Computer swap meets

In some large cities, such as Los Angeles, you can go to two or three swap meets monthly, where hundreds of dealers and manufacturers sell their wares at prices well below store cost (like $5 for those cables that list for $30). It pays to team up with a computer hacker as your guide, if possible.

Electronic universities

Take classes whenever you want to, day or night, with your computer and modem. Courses available from Electronic University Network (1150 Sansome Street, San Francisco, CA 94111).

Increased computer capacity

First, it was kilobytes or K's at 1024 characters; then megabyes or M's at one million plus characters. Now the industry is talking about gigabytes or G's at one billion characters, more or less. Putting the K, M, and G into perspective, think of two K's as one typewritten page, one M as 500 pages, and one G as more pages than most of us, even at our most prolific, could ever write in a lifetime.

Expert systems

Being able to give students accurate information about admission or transfer credits, or to answer hard questions about anything with the authenticity of a combined team of experts, is becoming more and more possible with the improvement of "expert systems" software. Someday soon, you will be able to team up with the experts in learning assistance and developmental education to develop and improve programs and to counsel and tutor your students.

Challenges and Opportunities

All of us — learning assistance professionals, developmental educators, administrators, and faculty, along with our students — live in an age of computer technology. This phenomenon is having increasing impact on our personal, academic, and organizational lives. It has the capacity to increase personal and professional effectiveness, organizational efficiency, administrative accountability, and student learning. The new technologies present us with special challenges — challenges that become opportunities to help all our students meet academic standards and grow as lifelong learners. The following list of challenges and opportunities is not all-inclusive. It represents behaviors and events that we can initiate, or that can be initiated by senior administrators as we influence them to meet these challenges and turn them into opportunities.

1.

A major challenge to all of us, whether we are practitioners or administrators, is **mastering computer technology**. We must be computer literate. We must be able to use computers for writing, for data collection and manipulation, for student assessment and program evaluation, for bibliographic research, and for sending information to and receiving information from colleagues. Mastery of these skills provides us with the opportunities to share information with colleagues easily and quickly, to become more organized and accountable as program administrators, to assist our students more rigorously with diagnostic and prescriptive skills programs, to write more meaningful reports, to publish and earn promotions, and to be in touch at all times, regardless of distance, with colleagues who need our professional help or from whom we can get answers to professional questions. This challenge presents a further opportunity for those of us who already use our computers to do many of these things. We can volunteer to present computer workshops at state, regional, and national conferences. We can review software for educational journals. We can act as mentors for colleagues at our own institutions.

2.

A second challenge involves **networking for professional growth**. We need information on professional associations, conferences, workshops, grants, program materials, consultants, and position vacancies. This creates the opportunity for some organizations like the National Association for Developmental Education, Western College Reading and Learning Association, or Commission XVI of the American College Personnel Association to set-up an electronic

bulletin board that can be accessed by all learning assistance and developmental education professionals from their computers at any time on any day. This opportunity can give all of us an electronic information center and post office.

3.

A third challenge, **encouraging the development of imaginative, well-designed, and useful educational software**, presents us with opportunities to influence software authors and publishers by telling them what we see as useful instructional software and by writing letters of encouragement or criticism as we find imaginative and well-designed software programs. We might also seize this opportunity to participate as content specialists in the development of software for basic skills programs.

4.

A fourth challenge concerns **improving our software purchasing decisions**. We can only guess at the instructional value of advertised software. In addition, we don't know what is available either for program management or for computer-assisted instruction in basic developmental skills. This is an opportunity for one of our professional associations to develop a software clearinghouse that describes and evaluates available programs. Such a clearinghouse could benefit from the pioneering work in software evaluation that was recently completed by the Media Committee's Counseling Software Review Board of the American Association for Counseling and Development. Also worth following is the progress of the National Computer Advisory Committee from the League for Innovation in the Community College as it develops its guidelines for computer software.

These four challenges, if seen by us as opportunities for responsible professional actions, can increase our teaching effectiveness and administrative efficiency. They can also demonstrate to our institutions' central administrators and to our faculty colleagues that we, as learning assistance practitioners and developmental educators, are professionals of the highest order.

5.

A fifth and final challenge comes as no surprise to us: the day-to-day opportunity for **collecting and organizing information for decision-making**. We, as skilled professionals who present workshops and give advice on time management, reading, critical thinking, listening and notemaking, memory, problem solving and decision making, must use our time efficiently to collect information from journals and books as well as from the notes that we make at conferences and workshops so that we can remember this information when we must make informed decisions about computer technology and its usefulness in our learning assistance and developmental education programs.